Question: Is clay a good material to build on?

Answer 1: by [lftr67](http://answers.yahoo.com/my/profile;_ylt=Aqmc.wwenZyMsNfbOnjElJIDxgt.;_ylv=3?show=NUKWB93naa)

**Best Answer - Chosen by Asker**

Limestone is a rock. Assuming the formation in question is not highly fractured it would make a very sturdy foundation for a building.  
  
As for sand, silt, and clay, there is no reason a building couldn't be very stable and secure on sediments of that type. Large parts of the Southeast US are built on soft sediments (Memphis, TN, Jackson, MS, etc.). When these become an issue is during vibration. Some areas with those sediments can fall victim to liquefaction. That is when sandy layers are saturated with water and shaken (usually by an earthquake). The sand loses its ability to support weight and buildings can collapse. This happened in Japan and (historically) in Arkansas during the quakes of 1811-1812.  
  
Sand, silt, and clay are usually found together in layers so it's hard to say which one is 'best'. If I had to pick I'd say sand is the worst since it's susceptible to liquefaction and clay is the best since it is relatively impermeable to water.

## Best Answer - Chosen by Voters

Clay soil retains water.  
  
On the Texas Coast in areas like Houston the water table is low and the clay soil is thick; often called Texas Gumbo. Because of this basements are almost never built. Instead a floating foundation is used. This foundation has no piers to bedrock, and just sits along the ground, this is a type of shallow foundation and it can only be used in areas where the frost line is fairly low (it doesn't freeze deeply underground).  
  
The problem is if the water table changes. Pumping ground water out of the ground has caused subsidence, which has caused some foundations to crack as the land underneath it drops down. If there is too much subsidence then the foundation can be ruined.  
  
If you try to use a shallow foundation in an area with a deep frost line the water can collect under the foundation and the repeated freezing and melting cycles can cause the foundation to crack. Remember ice takes up more volume than liquid water so if it gets into a crack it will expand that crack over time. But in areas like Alaska and northern Canada you can't dig into the ground because it is permafrost so again you need to use a floating foundation. With foundations built here they try to keep the ground cool, global warming puts those foundations in danger.  
  
  
Changes in soil moisture can cause expansive clay to swell and shrink. This swelling can vary across the footing due to seasonal changes or the effects of vegetation removing moisture. The variation in swell can cause the soil to distort, cracking the structure over it. This is a particular problem for house footings in semi-arid climates such as South Australia, Southwestern US, Turkey, Israel, Iran and South Africa where wet winters are followed by hot dry summers.   
  
Clay deposits may be formed in place as residual deposits, but thick deposits usually are formed as the result of a secondary sedimentary deposition process after they have been eroded and transported from their original location of formation. Clay deposits are typically associated with very low energy depositional environments such as large lake and marine deposits.  
  
I live in a neighborhood built over what used to be a lake so the soil is mostly clay. Not only does that make it hard to dig into, but the clay can prevent water draining into the ground making flooding problems more dangerous. We are prone to flash floods.  
  
Clay is also not a strong material like stone or bedrock so again if you build a foundation on it you can have settling and the foundation can crack. Cracked Foundation repair is a common requirement for old houses. Remember the building's base plumbing, sewer lines, and gas lines are often run through the foundation if the pipes are cracked then the whole area has to be jack-hammered out and repaired.  
  
There is a creek that runs in one neighborhood with clay soils, the soil has eroded and the home owners are watching their backyards disappear. After a bad rainy season one house almost was lost to the creek. The city refused to repair it and the insurance company says that they are not responsible for it until the house is actually damaged; by then it would be totaled and so they wouldn't have to pay to repair it. Finally, after the rain ended the city engineer said they were going to do something about the problem.  
  
Building foundations on clay invites foundation cracks, the need for repairs, and extreme situations, disaster. Digging is hard, the land can wander, it holds water which can freeze, or be pumped out causing voids that will stress the foundation.